Visual image repositories at the Washington State University Libraries

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Abstract

The World Civilizations Image Repository (WCIR) and Photos Online are two collaborative image database projects under way at the Washington State University (WSU) Libraries. These projects demonstrate how the WSU Libraries have employed OCLC/DiMeMa’s (Digital Media Management) CONTENTdm in partnership with other University departments to develop visual collections free from copyright restrictions, as well as to manage “born digital” images on a collaborative basis.

Introduction

Since the publication in 2002 of papers by Raym Crow and Clifford Lynch (Crow, 2002; Lynch, 2003) about libraries serving as institutional repositories (i.e. academic libraries developing digital collections that preserve and provide access to the intellectual output – such as working papers, dissertations, and data sets – of their respective universities), there has been a great deal of interest among librarians in creating partnerships with various campus groups to begin collecting these materials.

This article discusses two pilot projects under way at the Washington State University (WSU) Libraries that seek to organize, preserve and disseminate high-quality images created by WSU faculty and staff. Although these efforts represent only one small aspect of a comprehensive institutional repository (images), they nevertheless demonstrate practical approaches for employing differing methods of collaboration between the WSU Libraries and other campus departments, as well as the central role of the WSU Libraries in maintaining access to visual materials.

The projects also provide an opportunity for the Department of Manuscripts, Archives, and Special Collections (MASC) to develop collections of images in both analog and digital formats that are relevant to the campus community and at the same ensure that fragile “born digital” photographs are cataloged and maintained in such a way that they will be available in the future. The projects that will be discussed are:

- the World Civilizations Image Repository (WCIR), a collaborative image database for use by WSU faculty in teaching World Civilizations courses; and
- Photos Online, a collection of current photographs taken by campus photographers intended for official University publications and marketing efforts.

The WSU World Civilizations courses are called General Education 110 and 111, and are required for students entering the University. The classes are global and comparative in approach, with an emphasis on interdisciplinary content including the material base of each civilization, its social system, ideological framework and creative arts[1].

Both projects employ OCLC/DiMeMa’s CONTENTdm software[2].

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**WCIR**

The impetus for the WCIR came from the recent (2002) donations of two faculty collections to the WSU Libraries, as well as the need of the World Civilizations faculty for relevant images to use in lectures and course assignments. Given the rapid pace of change in classroom technology and the use of Web based learning communities, faculties are especially interested in obtaining electronic images without fear of copyright concerns. Public domain images may be posted in Web accessible syllabuses, integrated in streaming PowerPoint lectures for distance courses, and generally shared in ways that would violate the fair-use clause for copyrighted images. Furthermore, WSU does not maintain a slide library for the General Education faculty, so even copyrighted images can be difficult to find on campus.

With this need on the part of the teaching faculty and the two donations mentioned above, the idea then took root to expand the Library’s existing digital collections, which focus on Campus and Northwest History, with a series of image databases tailored to the World Civilizations Program. With the donated photographs covering Central Asia, China, Turkey and Japan, as well as and historical engravings selected from the WSU Libraries’ rare book collection, these image collections combined became the working test site for the World Civilizations Image Repository[3]. After a presentation by WSU librarians to the World Civilizations faculty demonstrating the WCIR and the criteria for adding images to the project, additional faculties have pledged collections and provided suggestions for content (see Figure 1).

The basic criteria for accepting images are the following:

- the donor must hold copyright over the images and be willing to transfer those rights to the Washington State University Libraries; and
- the images should correlate with the cultures, topics and themes as outlined in the “Covenant” of course objectives and coverage for teaching World Civilizations 110 and 111 developed by the Department of General Education.

This Covenant is a document of agreements created by a group from the Washington State University World Civilizations faculty that not only outlines the course objectives, topics and cultures covered in the series, but also includes a library research assignment and a cultural assignment. According to the document, “the Covenant is binding on all of us who teach the course”. These guidelines were developed by the core World Civilizations faculty in a curriculum project funded by National Endowment for the Humanities[4].

The images should also be appropriate for classroom use. What is appropriate for classroom use? Generally speaking, personal family photographs are not included in the collections. We are especially interested in images of archeological sites that convey a sense of the geography, topographic features and material culture of various civilizations, architecture, religious rituals, and cultural events including traditional dress, dance and art. So far, we have worked with one professor who self-selected the images to be included in the WCIR. In another case, the faculty member asked us to choose what we thought was best. With all of the collections, we have only included photographs for which the faculty member holds the intellectual property rights, and is willing to donate these rights for academic use.

**CONTENTdm**

The image database software used for the WCIR and the Photos Online project is CONTENTdm. We first began working with CONTENTdm at WSU in 1999, while the product was a collaborative research project between a team led by Professor Greg Zick in the University of Washington Center for Information Systems Optimization (CISO) and the University of Washington Libraries. In 2001 a new company, DiMeMa (Digital Media Management) Inc., independent of the University of Washington, was formed to focus on research and product development[5]. DiMeMa and OCLC then formed a partnership in which OCLC supplied the marketing and support for CONTENTdm[6].

We started working with CONTENTdm in 1999 as part of a Digital Images Initiative led by the State Library of Washington. After the series of grants ended we have continued to use the software, for several reasons. It is very flexible in creating the look of any given database. Library staff can design the image databases with a range of searching options including pre-selected searches, such as a single hyper-link for a particular search, a drop-down list of search topics, a simple key-word (or Boolean-enabled) search box, an advanced search engine, and the ability to browse all of the objects in a given collection. Collections may also be combined for cross-database searching. All of these features can then be placed on a Web site, with the result that the database interface can be designed for any intended audience. The software also allows one to determine how the search results will look, i.e. how many thumbnail images will appear, what the results screen will contain (i.e. navigation bars), and even the option to have designated descriptive fields, such as subject or genre terms, hyper-linked so that if users click on a
given term CONTENTdm will launch a search on that word within the given field. For librarians accustomed to working with inflexible OPACs or in-house programmed databases after the programmer has left for another job, these are heady choices indeed.

The decision made by Professor Zick in the 1990s to map the CONTENTdm metadata structure to the emerging Dublin Core standard was a good one[7]. Dublin Core metadata includes 15 elements such as title, creator, date, and subject. It is flexible and easy for temporary workers to learn to use. The adoption of the Dublin Core standard by the Open Archives Initiative ensures that the metadata created in CONTENTdm collections can be harvested by other projects. Also, the software allows for several export options, including ASCII and XML.

According to the DiMeMa Web site, “CONTENTdm provides support for the Open Archives Initiative Protocol for Metadata Harvesting Version 2.0 (OAI-PMH v2), an emerging standard for metadata harvesting. CONTENTdm Servers can function as OAI repositories” (DiMeMa, Inc., 2004).

As an example of CONTENTdm’s OAI compatibility, Alan Cornish, a WSU Systems Librarian, worked with the ARC project at Old Dominion University to harvest 10,526 images from our CONTENTdm collections to their database[8]. CONTENTdm’s OAI compatibility is not yet totally seamless. Challenges still remain with the rate at which OAI harvesting occurs (CONTENTdm collections load all at once instead of in a steady flow) and the way that CONTENTdm displays some characters, such as apostrophes, which causes them to disappear after harvesting. DiMeMa is aware of these difficulties and will no doubt address them.

At WSU, we have also seen DiMeMa’s willingness to take on product development for specific projects. In 2000, we began a project with the University of Washington Libraries to scan and describe historical maps. As part of the project, we
wanted to compress our high-resolution map scans into the Lizard Tech MrSID format[9]. DiMeMa programmed the CONTENTdm software to include MrSID files as one of the acceptable high-resolution formats (TIFF and JPEG are the others). This allowed us to incorporate the benefits of the MrSID files within a CONTENTdm database[10]. The result is that users visiting the Early Washington Maps site can take advantage of CONTENTdm’s numerous search options, such as keyword searching, selecting from a predefined list of topics, and clicking on icons provided on a graphic index or in a historical timeline. Once an icon is selected and a full-screen image appears with its description, users then have the option to click on a URL which leads them to a MrSID image viewer that has the same look as the rest of the database and the functionality to click and zoom to fully study the details of a given map.

Work flow for the WCIR Project
At the start of the project (spring of 2003), several members of the World Civilizations faculty mentioned that they had intended for some time to label and scan images, but had not had the chance to do so. Participating in the WCIR project allows the faculty member to concentrate only on the selection and description of images, while scanning, metadata entry, database design and maintenance all take place within the library.

The basic work flow begins with an expression of interest on the part of a faculty member. If the professor holds the copyright to the images (that is if he or she took the pictures) and the photographs fall within the cultures and topics covered in the World Civilizations courses, the faculty member is asked to sign a deed of gift transferring the intellectual property rights for academic use to the WSU Libraries. The faculty member is asked to provide as many metadata as possible, generally a good caption including location and date. The images are then scanned (or retrieved from a CD in the case of digitally processed photographs) by temporary employees working in the Department of Manuscripts, Archives, and Special Collections (MASC) at the WSU Libraries and the electronic files are imported into the CONTENTdm acquisition station where the Dublin Core metadata is added.

CONTENTdm’s template creator feature allows us to repeat regularly reoccurring elements, such as creator, source, and publisher. We use controlled subject and type/genre terms selected from the Library of Congress’s Thesaurus of Graphic Materials[11]. The Getty’s Thesaurus for Geographic Materials has also proved invaluable for completing the Dublin Core coverage field[12]. Once the images and metadata are added to the database, we solicit additional comments from the donor and revise the database accordingly.

Design features of the WCIR
The current front page (see Figure 1) of the WCIR makes use of CONTENTdm’s numerous searching features embedded in a custom Web interface or contextual client. The page provides access to various collections:

(1) engravings from the MASC rare book collections;
(2) Central Asian and Chinese photographs by Professor Marina Tolmacheva; and
(3) photographs of Turkey and Japan by Professor Paul Brians.

The images in the WCIR are a mixture of scans made from analog prints or book illustrations as well as “born digital” images. Although Professor Tolmacheva used a traditional camera during a trip to China in 2003, the images she donated were also processed as digital images and stored on CDs. During his trip to Turkey in 2002, Professor Brians used a digital camera exclusively. After he returned to Pullman, he donated the full-resolution images along with captions to the Libraries. His collection of photographs of Japan was similarly provided on CD. Both of Professor Brians’ collections also feature CONTENTdm’s full-resolution option, whereby users can download high resolution images.

There are two ways to access the full-resolution images. In the primary (contextual) search client, after an image is selected to view, a link labeled “Full Resolution” is provided at the bottom of the metadata. Clicking on this link will initiate the option to download the full-resolution file. The second method of accessing these files is through the advanced search (HTML) client. After the user selects an item from the list of results, CONTENTdm opens a second window with the JPEG image[13]. Above this image are a series of three tabs with options for “Image”, “Description”, and “Full Resolution”. Selecting the “Full Resolution” tab will open a third browser window with the full-resolution file (see Figure 2).

There are four primary ways to search from the WCIR front page. First, users can select any of the 29 pre-selected searches located in a drop-down box on the upper left of the screen under the heading “Browse by Subject”. This list will expand over time as new images are added to the various WCIR collections. A selection of current topics includes images of Africa, China, Maps, Mosques, Public baths, Silk making and Troy.

The second way, placed to the right of the drop-down box, is a search box where users can enter keyword terms. This search option is set to accept Boolean operators. Also included in this top row of options is an option at the top of the page is a link to other WSU Digital Collections.

The third way to access the collections is a series of four graphic buttons aligned to the left of the
Figure 2. CONTENTdm’s full resolution option in the contextual and HTML “Advanced Search” clients.
screen, labeled Engravings (from MASC), Silk Road (including Central Asia and China by Tomacheva), Turkey, and Japan (Brians). Clicking on any of the graphics will open a new window to the corresponding individual collection, each with its own custom interface and results screen.

The final method is located in the paragraph of text to the right of the buttons that describes the WCIR project and provides links to the individual collections. The framework of the WCIR therefore allows users to search across all collections or search individual databases for a given topic or assignment.

The search results are displayed in two rows consisting of five columns of thumbnail images. The title displays beneath each thumbnail result. A navigation bar along the top the screen allows users to return to the front of the World Civilizations Image Repository or to choose from a number of other sites: a complete list of CONTENTdm digital collections at WSU, the MASC home page, and the World Civilizations home page maintained by the WSU Department of General Education. Once the user clicks on a thumbnail image or the text below the images, a full-screen JPEG image appears with the descriptive metadata below. Again, the same navigation banner appears at the top of the screen.

One last feature of note on the World Civilizations Image Repository’s front page is a sample reserve page on Chinese silk making. We created this reserve page using CONTENTdm’s “My Favorites” feature. When browsing images in CONTENTdm, the option “Add to My Favorites” is provided. If one clicks on this link, CONTENTdm sends cookies to one’s machine which point to the specified images. CONTENTdm, through a series of basic steps, will then allow the instructor (or any user) to edit his or her “favorites” and then generate a basic HTML page. We followed this process after choosing a series of three engravings from a 1736 edition of Jean Bapist Du Halde’s Description Géographique, Historique, Chronologique, Politique, et Physique de l’Empire de la Chine showing the process of silk production (see Figure 3).

Once CONTENTdm generated the plain HTML page based on the selected “My Favorites” images, we simply added the navigation bar used in the WCIR, a title and a couple of sample study questions. This method allows us to highlight any given set of images in the WCIR as they match a given topic or culture in a World Civilizations class. The reserve pages also remove any concerns about the students’ inability to locate specific images within the database. However, it should be noted that we were unable to get CONTENTdm’s “My Favorites” to work on several WSU Library computers. Browsers configured for a high level of security are incompatible with this feature (see Figure 4).

**Sustainability and future plans**

The WCIR is regularly backed-up on magnetic tape. We also burn CD and DVD disks with the full-resolution images. Full-resolution images have also been made available to the Department of General Education for use by the teaching faculty. As we move beyond this pilot phase, we plan to make the World Civilizations Image Repository images and metadata available for OAI harvesting. Given our ability to export the metadata from CONTENTdm and the storage of the full resolution images both online and on CD/DVD, we should be ready to migrate the databases to other systems if necessary. With these first databases completed, we plan to solicit and begin work over the summer on additional collections, while applying for external funds. Even without grant support, both the WSU Libraries and General Education would like to expand the project, and will do so through general operating budgets.

The WCIR exemplifies the close collaboration between the librarians and faculty teaching in the Department of General Education. WSU librarians have taken responsibility for much of the labor involved in building these image databases by scanning the images, adding metadata, designing the databases, and providing training for their use. At the same time, the teaching faculty has demonstrated a willingness to contribute images along with the corresponding intellectual rights and to assist in providing captions so that their visual collections can be used by other faculties in teaching. The Libraries have benefited by being the recipients of donations of collections that are relevant to ongoing instruction on campus. The WCIR also reflects several of the key goals (collaboration with other departments, to strengthen collections, and to adapt technology to meet undergraduate needs and expectations for access to information) outlined in the WSU Libraries’ 2002 strategic plan, entitled “The Information Union: the WSU Libraries of the Future”[14]. Furthermore, given the challenges of describing and providing access to electronic data (in this case digital images), the project shows how CONTENTdm can facilitate access to and management of digital materials.

**Photos Online**

Photos Online is another partnership between the WSU Libraries and the WSU Marketing and Communications Division to create a Web-accessible image database for use by the University
Figure 3 Course reserve page on Chinese silk production using the CONTENTdm "My Favorites" feature

Chinese Silk Making

Consider the following images. What can we learn about the silk making process from these plates? Was the production of silk an important export for the Chinese? How do the silk garments manufactured in the East compare with the garments worn in Western Europe?

Click on a thumbnail to view the full-sized item:

1. (Silk making), 1739
2. (Silk making), 1739
3. (Silk making), 1739

Powered by CONTENTdm
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info@contentdm.com

Figure 4 Detail of Chinese silk making
community in Web sites, PowerPoint presentations (especially those focused on recruiting efforts), brochures and other publications[15]. Photos Online differs from the WCIR in that the Marketing and Communications Division oversees the addition of new images complete with metadata to the database.

Need for partnership
In 2000, the Marketing and Communications Division wanted to move their visual library (primarily slides and contact prints) to the Web so that users from around the WSU campus could browse and select images with minimal assistance from Marketing and Communications Division staff. The Marketing and Communications Division also wanted their photographs in some type of database format so that they could keep better control over them. The photographers were also in the process of changing to digital cameras for most of their work, so the difficulties of organizing and preserving digital files in addition to hard copies became manifest.

At the same time, as the librarian in charge of the WSU Libraries’ Historical Photograph Collections in MASC, I was becoming increasingly concerned over the long-term retention of these digitally created resources. The WSU Libraries has served for the last 30 years as the repository for the inactive photographs taken by campus photographers. Indeed, these images comprise the bulk of the Libraries’ campus visual collection, and are used frequently by students, faculty, alumni and the public.

Working again with my colleague Alan Cornish from Digital Collections and Systems, we proposed that the Libraries would provide image database software (CONTENTdm), training, and metadata advice, as well as hosting the database on a WSU Library server. In exchange, the Marketing and Communications Division would dedicate the staff resources to scan and describe the images, and agree to transfer the images to the WSU Libraries once they are no longer current.

The Marketing and Communications Division also choose to restrict access to the Photos Online images to the WSU community. All such restrictions will be lifted once the Libraries receive the images. Given the recentness of this project, we have only transferred two images from the active Photos Online database to the Libraries’ Photos Online Archive. How long do images stay current? According to the Marketing and Communications Division, photographs of people are generally retired within five years, while buildings and natural scenes stay “current” a little longer. In the past, transfers of analog photographs (prints, contact sheets and slides) between the Marketing and Communications Division and the Libraries have been made ten to 15 years after the images were initially taken. So even with the Marketing and Communications Division retaining photographs of buildings and natural scenes beyond five years, I anticipate that we will receive the materials sooner than in the past, and unlike analog photographs, these digital images will arrive pre-selected with item-level metadata.

To get the Photos Online project started, we held a series of project meetings to work out the terms of the agreement, and to discuss unqualified Dublin Core metadata and the use of CONTENTdm software.

The WSU Library provided a basic PC workstation with the CONTENTdm acquisition program loaded. The machine is mapped to a Library server that holds the database folders. This was necessary because the campus photographs in the Marketing and Communications Division work exclusively with Apple machines. As yet, CONTENTdm does not function with the Mac operating system.

We also discussed the importance of using a controlled vocabulary, such as the Library of Congress’s Thesaurus for Graphic Materials, in the database. The campus photographers developed a clever metadata sheet (see Figure 5) on which the photographers circle who took the pictures, equipment used, subject categories, etc. These sheets are then provided along with the images to the Marketing Communications staff who in turn enter the metadata into the CONTENTdm database. Once the images and metadata are transferred to the Libraries, my intent is to edit these terms globally to conform with controlled vocabularies (see Figure 5).

Design features of Photos Online
The front page of Photos Online includes three search options:
(1) a keyword search;
(2) a drop-down box of predefined searches; and
(3) an advanced search engine.

The first two features are similar to those described in the World Civilizations Image Repository project above (see Figure 6). The advanced search option is a standard database interface provided by DeMeMa. It is ready for use as soon as objects are loaded into a database. The advanced search engine also provides an immediate database interface that is useful during the collection-building process, and may also serve as a more permanent search option for institutions without the design expertise (or time) required for creating a graphic interface (contextual client) with custom results screens. The advance search engine allows users to search across individual or multiple fields, select search preferences, such as Boolean operators, and browse terms used in any
searchable field. It also enables users to browse an entire collection and create the “My Favorites” pages described above (see Figure 7).

Information about the purpose of the Photos Online database, the image request forms and official graphic identity photograph guidelines are also provided. As the department on campus charged with developing and policing WSU’s graphic identity program, staff from the Marketing and Communications Division were pleased with the flexibility that CONTENTdm provides in designing the database interface. Indeed, a Marketing and Communications Division Web designer incorporated the official WSU banner (required on every campus Web site) along the top of the results screens (see Figure 8).

Images are selected for inclusion in the Photos Online database on the basis that they will be of general interest to departments around campus. Currently the images added to Photos Online are a mixture of scanned slides and images taken with a digital camera. With the growing use of digital cameras, photographers anticipate that they will soon stop scanning slides and work almost exclusively with these “born digital” images. Without this agreement, there is a high probability

that many of these digital images will be lost, or if not lost, then poorly described. One unforeseen by-product of the Photos Online database is that Web masters from around the WSU campus are using the Web-accessible, low-resolution images from the site for departmental homepages, and in the process improving the overall look of the WSU Web site.

Conclusion

The WCIR and Photos Online projects show two models of collaboration between the WSU Libraries and campus units to provide Internet access to and preservation of quality visual materials, while at the same time managing copyright issues. For the WCIR, WSU librarians have played a hands-on role in soliciting collections, working with faculty to organize and catalog images, and preparing a workable database environment with collections that can be cross-searched or examined individually. In addition, librarians have worked closely with the World Civilizations faculty to ensure that relevant topics
Figure 6 CONTENTdm’s advanced search HTML client

Figure 7 Photos Online front page
are emphasized and that these images may be used in teaching. On the other hand, the Photos Online database demonstrates a mutual agreement between the Marketing and Communications Division and the Libraries, where the Libraries provide training and support and serve as a repository for visual materials and the Marketing and Communications Division devotes the staff and the images to expand the database. With both projects, we are taking small steps to describe and maintain fragile digital images created by campus faculty and staff.

Notes

1. See www.wsu.edu:8080/%7Ewldciv/teachindex.html
4. See www.wsu.edu:8080/%7Ewldciv/covenant.html
5. See www.contentdm.com/about-us.html
6. See www.oclc.org/digitalpreservation/services/
7. See http://dublincore.org/
8. See http://arc.cs.odu.edu/
9. See www.lizardtech.com
10. See www.wsulibs.wsu.edu/holland/masc/xmaps.html
12. See www.getty.edu/research/tools/vocabulary/tgn/
13. See www.wsulibs.wsu.edu/holland/masc/xturkey.html
14. See www.wsulibs.wsu.edu/general/iuplan2.html
15. See www.wsu.edu/photos-online/ (access to this database is limited to those with WSU credentials).

References